Holyrood Mathematics Department

Third level numeracy coursework

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- MyMaths – www.mymaths.co.uk
- Craig Barton - http://www.mrbartonmaths.com/index.html

  https://variationtheory.com/
- Whiterose Maths- www.whiterosemaths.com
- Teejay Publishers - https://teejaymaths.com/home/
- Dr Frost Maths- https://www.drfrostmaths.com/
- UKMT- https://www.drfrostmaths.com/browse.php?mode=ukmt

  https://www.ukmt.org.uk/
- Corbettmaths- https://corbettmaths.com/

We are extremely thankful for allowing the use of your materials.

Best wishes,

Holyrood Mathematics and Numeracy department

Contents:

Lesson 1: Rounding and Estimating	MNU 3-01a

Benchmark:

- To be able to round decimal fractions to three decimal places
- To use rounding to routinely estimate the answers to calculations

Lesson:

- https://app.mymaths.co.uk/71-lesson?hasFlash=true
- https://app.mymaths.co.uk/74-lesson/decimal-places

Resource& video:

- https://mathsbot.com/manipulatives/placeValueCounters
- https://corbettmaths.com/2013/09/07/rounding-to-1-or-2-decimal-places/
- Questions courtesy Mr Barton Variation Theory + UKMT

Question 1: Intelligent Practice

Worked Example	Your turn
8.7337 **Round to:** **1DP** _____ **2DP** _____ **3DP** _____	**8.3773** **Round to:** **1DP** _____ **2DP** _____ **3DP** _____

Number	1 decimal place	2 decimal places	3 decimal places
1. 0.1234			
2. 0.2345			
3. 0.3456			
4. 0.4567			
5. 0.04567			
6. 0.40567			
7. 0.45067			
8. 9.45067			

Question 2 [JMC 2019 Q7]

The shortest street in the UK, Ebenezer Place in Wick, is **2.06 m** long. The Trans-Canada Highway, one of the world's longest roads, is approximately **7821 km** in length. Approximately, how many times longer than the street is the highway?

- 4,000,000
- 400,000
- 40,000
- 4000
- 400

Working

Question 3 [IMC 2010 Q4]

A radio advertisement claimed that using a particular brand of artificial sweetener every day would 'save **7 000** calories in a year'.

Approximately how many calories is this per

- 20
- 40
- 70
- 100
- 140

Working

Question 4 [Kangaroo Grey 2015 Q2]

Which of the following numbers is close

- 0.1
- 1
- 10
- 100
- 1000

Working

Question 5: Extra practice

Round each number to a suitable degree of accuracy and give an approximate answer to each:-

a) 412 x 38 ☐ b) 2137 x 384 ☐ c) 0·229 x 296 ☐

d) 5824 ÷ 19 ☐ e) 879 300 ÷ 3115 ☐ f) 0·3732 ÷ 1·83. ☐

Lesson 2: Times tables up to 12	**MNU 3-03b**
Benchmark: • To recall quickly, multiplication and division facts to the 12th multiplication table	
Lesson: • https://app.mymaths.co.uk/45-lesson/multiples • https://app.mymaths.co.uk/46-lesson/factors-and-primes	
Resource: • https://mathsbot.com/manipulatives/countingStick • https://corbettmaths.com/2015/12/10/times-tables/ • Questions courtesy of Teejay	

Question 1: Complete the number square for times tables up to 12

X	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Question 2: Write down the first 10 multiples of the following:

5

8

10

12

6

7

Question 3: Write down the :

a) two factors of 11

b) four factors of 14

c) four factors of 10

d) five factors of 16

e) six factors of 18

f) eight factors of 30

Question 4: Complete the following true/ false questions about factors:

a) 4 is a factor of 32 ☐ b) 6 is a factor of 38 ☐ c) 7 is a factor of 56 ☐

d) 8 is a factor of 72 ☐ e) 9 is a factor of 45 ☐ f) 5 is a factor of 135 ☐

Question 5: Complete the following true/ false questions about multiples:

a) 27 is a multiple of 3 ☐ b) 42 is a multiple of 6 ☐ c) 54 is a multiple of 7 ☐

d) 105 is a multiple of 5 ☐ e) 9 is a multiple of 45 ☐ f) 121 is a multiple of 11 ☐

Extension: **[Kangaroo Grey 2018 Q4]**

Which number should replace the symbol γ in the equation to make it correct?

$$2 \times 18 \times 14 = 6 \times \gamma \times 7$$

Working

Lesson 3: Addition and Subtraction with Whole Numbers	MNU 3-03a

Benchmark:

- To solve addition and subtraction problems with whole numbers.

Lesson:

- https://app.mymaths.co.uk/33-lesson/adding-in-columns
- https://app.mymaths.co.uk/34-lesson/subtraction-columns
- https://app.mymaths.co.uk/1716-lesson/more-written-methods

Resource:

- https://mathsbot.com/
- Questions courtesy of MyMaths + Teejay + UKMT

Question 1:

Decide whether to ADD or SUBTRACT to solve the problems below:

As a bus arrived at a stop, there were 38 people on board.
At the stop, a further 17 passengers got on.
How many were there now on the bus?

On January 1st 2018, I noted that my car had done 28 312 miles.
On January 1st 2019, the reading on the odometer was 41 187.
How many miles had my car covered over the year?

Arthur bought a brand new car for £8998.One year later, it was valued at only £7005.

How much had the value of his car dropped over the year?

There were 69 people in a queue outside a night club.
As the doors were about to open, 24 more people arrived.
How many were now in the queue?

Question 2

Choose your own mental method to find the answers to these :- (You might like to time yourself).

a) 39 + 58 ☐ b) 53 + 66 ☐ c) 70 – 25 ☐ d) 69 – 53 ☐

e) 100 – 72 ☐ f) 70 – 39 ☐ g) 350 + 190 ☐ h) 690 + 220 ☐

i) 700 – 140 ☐ j) 1000 – 280 ☐ k) 2300 + 4500 ☐ l) 9000 – 6900. ☐

Time:

Question 3: Complete the following number patterns

1. 53,595 – 1,000 =
2. 42,900 – 536 =
3. 77,281 – 7,036 =
4. 32,318 + 5,600 =
5. 57,433 + 867 =
6. 29,200 + 216 =

1. 313 + _____ = 403
2. ____+ 30 = 615
3. 701 - ____ = 651
4. ____- 60 = 452

5. 881 + ____ = 931
6. ____ + 40 = 966
7. 326-____ = 276
8. ____ - 30 = 274

Question 4: [JMC 2012 Q11]

In the following expression, each □ is to be replaced with either + or – in such a way that the result of the calculation is 100.

123 □ 45 □ 67 □ 89

Working

Lesson 4: Addition and Subtraction with Decimals	MNU 3-03a
Benchmark: • To solve addition and subtraction problems with decimal fractions to 3DP	
Lesson: • https://app.mymaths.co.uk/58-lesson/add-and-subtract-decimals	
Resource: • https://mathsbot.com/ • https://corbettmaths.com/2013/03/28/subtracting-decimals/ • https://corbettmaths.com/2013/03/28/adding-decimals/ • Questions courtesy Corbettmaths + Teejay + UKMT	

Question 1:

Decide whether to ADD or SUBTRACT to solve the problems below

Richard buys a notebook that costs £6.78 and a pen that costs £4.19.

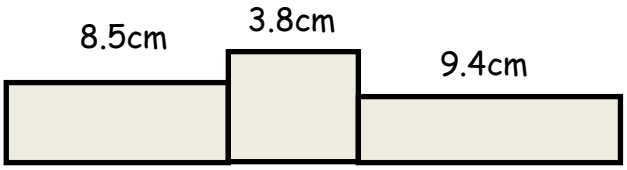
Work out the total cost.

Chloe has a ribbon 8 metres long.
She cuts two pieces from the ribbon.
The first piece was 1.28 metres long.
The second piece was 0.65 metres long.
How much ribbon is left?

Question 2:

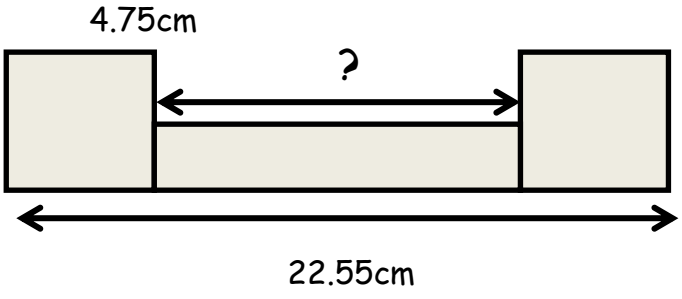
Three blocks are placed together as shown.

Find the total length of the three blocks.



Question 3:

Two identical squares and a rectangle are shown. Find the length of the rectangle.



Question 4: [IMC 2015 Q1]

What is the value of $1 - 0.2 + 0.03 - 0.004$?

Working:

Question 5: [JMC 2013 Q1]

Which of the following has the largest value?

- $1 - 0.1$
- $1 - 0.01$
- $1 - 0.001$
- $1 - 0.0001$
- $1 - 0.00001$

Working:

Extension: Variation practice

$0.2 + 0.7 =$	$0.43 + 0.77 =$	$3.56 - 0.35 =$	$3.55 - 0.35 =$
$0.20 + 0.7 =$	$0.43 + 0.07 =$	$3.56 - 0.36 =$	$3.54 - 0.35 =$
$0.22 + 0.7 =$	$0.43 + 0.08 =$	$3.56 - 0.37 =$	$3.44 - 0.35 =$
$0.02 + 0.7 =$	$0.43 + 0.8 =$	$3.56 - 0.47 =$	$3.34 - 0.35 =$
$0.02 + 0.07 =$	$4.3 + 0.8 =$	$3.56 - 0.57 =$	$33.4 - 0.35 =$
$0.22 + 0.07 =$	$4.3 + 0.9 =$	$3.56 - 0.57 =$	$0.334 - 0.35 =$
$0.202 + 0.007 =$	$4.03 + 0.9 =$	$3.56 - 0.507 =$	$3.55 - 0.29 =$

Lesson 5: Integers (Level 2 consolidation)	MNU 3-04a
Benchmark: • **To be able to order integers on a number line.** • **To understand integers in context**	
Lesson: • https://app.mymaths.co.uk/47-lesson/negative-numbers-1	
Resource: • **https://corbettmaths.com/2013/06/06/ordering-numbers-including-negatives/** • **https://corbettmaths.com/2013/05/15/negative-numbers-temperature/** • **https://mathsbot.com/manipulatives/doubleSidedCounters** • Questions courtesy of Mr Barton- Variation Theory, Mymaths, UKMT + Corbettmaths	

Question 1: Order the following numbers on the number line:

4 7 9 -3 -4 5 -5

10 -6 -8 -1 2 3 1

6 -10 8 0 -2

Question 2: Place a > or < sign between each pair of numbers

a) 5 ☐ 9
b) -9 ☐ 2
c) 2 ☐ -7
d) 2 ☐ -8
e) 5 ☐ 1
f) 5 ☐ -7
g) 5 ☐ 10
h) 10 ☐ -1

< Means less than > Means more than

Question 3: Look at the following temperatures. Place them in order from coldest to warmest.

a) -18°C -17°C -12°C 27°C 30°C 25°C 22°C

_____

b) 4°C 29°C -19°C 6°C 11°C -17°C 19°C

_____

Question 4: Here are 7 cities and their current temperature.

Anchorage	-16°C
Kathmandu	-7°C
Mexico City	24°C
Moscow	-11°C
Mumbai	33°C
Oslo	-1°C
Tokyo	0°C

a) How much hotter is Mexico City than Moscow? ☐

b) How much colder is Kathmandu than Tokyo? ☐

c) If the temperature rises in Oslo by 9^0C what will be its new temperature? ☐

d) What is the temperature difference between the coldest and hottest cities? ☐

Question 5: [IMC 2001 Q1]

Between which of the following pairs of numbers is there the greatest difference?

- -3, 8
- -5, -13
- 1, 11
- 4, -5
- -6, -15

Working:

Using negative numbers- revision

Q1

a) What is the difference between -2 and 3?

b) What is 5 less than 4?

c) What is 12 more than -3?

d) What do you need to add to -7 to get 5?

e) What do you need to take from 9 to get -1?

Q2

Here is the temperature in 4 cities.

London 9^oC	***New York*** -5^oC	***Toronto*** -7^oC	***Tokyo*** 7^oC

a) How much colder is Toronto than Tokyo?

b) The temperature in New York dropped by 3 degrees, what is the new temperature?

c) The temperature in Toronto dropped by 8 degrees, what is the new temperature?

Q3 Order the following from greatest to smallest

-11	
18	
8	
0	
-7	
-5	

Lesson 6: Adding and Subtracting Integers	MNU 3-04a

Benchmark:

- **To be able to solve addition and subtraction problems working with integers**

Lesson:

- https://app.mymaths.co.uk/48-lesson/negative-numbers-2

Resource:

- **https://mathsbot.com/manipulatives/doubleSidedCounters**
- **https://corbettmaths.com/2013/06/08/negatives-addition-and-subtraction-2/**
- Questions courtesy of Mr Barton- Variation Theory + Corbettmaths

Question 1: Pattern Spotting (adding negatives)

1. $3 + 5 =$
2. $3 + 4 =$
3. $3 + 3 =$
4. $3 + 2 =$
5. $3 + 1 =$
6. $3 + 0 =$
7. $3 + -1 =$
8. $3 + -2 =$
9. $3 + -3 =$
10. $3 + -4 =$
11. $3 + -5 =$

...

12. $3 + -12 =$
13. $3 + -59 =$

1. $-3 + 5 =$
2. $-3 + 4 =$
3. $-3 + 3 =$
4. $-3 + 2 =$
5. $-3 + 1 =$
6. $-3 + 0 =$
7. $-3 + -1 =$
8. $-3 + -2 =$
9. $-3 + -3 =$
10. $-3 + -4 =$
11. $-3 + -5 =$

...

12. $-3 + -12 =$
13. $-3 + -59 =$

Question 2: Pattern Spotting (subtracting negatives)

1. $3 - 5 =$
2. $3 - 4 =$
3. $3 - 3 =$
4. $3 - 2 =$
5. $3 - 1 =$
6. $3 - 0 =$
7. $3 - -1 =$
8. $3 - -2 =$
9. $3 - -3 =$
10. $3 - -4 =$
11. $3 - -5 =$

...

12. $3 - -12 =$
13. $3 - -59 =$

1. $-3 - 5 =$
2. $-3 - 4 =$
3. $-3 - 3 =$
4. $-3 - 2 =$
5. $-3 - 1 =$
6. $-3 - 0 =$
7. $-3 - -1 =$
8. $-3 - -2 =$
9. $-3 - -3 =$
10. $-3 - -4 =$
11. $-3 - -5 =$

...

12. $-3 - -12 =$
13. $-3 - -59 =$

Question 3:

In the magic squares below, the numbers in any column, row or diagonal add up to give the same answer.
Complete each magic square.

-4	**-9**	**-2**
-8		**-6**

-3		**-1**
2		
1		

Question 4:
Work out the missing numbers

a) ___ + 3 = 1 b) 0 - ___ = 8 c) -6 + ___ = -1

d) ___ - 5 = -13 e) 9 - ___ = 15 f) -2 - ___ = 5

Question 5: Extra practice (mixture)

a) 11 – 15 ☐ b) –9 + 5 ☐ c) –4 – 8 ☐ d) –4 + –3 ☐

e) –9 – +4 ☐ f) 10 – –3 ☐ g) 7 – 20 ☐ h) –2 – –5 ☐

i) 12 + –7 ☐ j) –4 – –1 ☐ k) –9 + –8 ☐ l) 8 – 13 ☐

m) 6 – –11 ☐ n) –7 – +7 ☐ o) –6 – 5 ☐ p) –20 + –3 ☐

q) –9 – –15 ☐ r) –8 + 25 ☐ s) 31 – 50 ☐ t) –30 – –16 ☐

u) –41 – 14 ☐ v) – 5 – +23 ☐ w) –16 + –15 ☐ x) 40 – –40 ☐

Lesson 7: Multiplication with Whole Numbers	**MNU 3-03a** **MNU 3-03b**
Benchmark: • To solve multiplication problems using the grid method	
Lesson: • https://app.mymaths.co.uk/1719-lesson/short-and-long-multiplication • https://app.mymaths.co.uk/5782-lesson/mental-multiplication	
Resource: • https://corbettmaths.com/2015/12/10/times-tables/ • https://corbettmaths.com/2013/12/20/multiplication-grid-method-video-199/ • Questions courtesy of Mr Barton- Variation Theory + Corbettmaths	

Question 1: Using the grid method for single digits, multiply the following:

a) Paula pays £30 each month for her mobile phone.
How much will she have paid after 6 months? £

b) Jenny paid £17 each week to reduce her catalogue account?
How much had she paid after 6 weeks? £

c) If there are sixty seconds in one minute.
How many seconds are there in 7 minutes?

d) Chaz has filled 6 photograph albums. Each album contains 235 photographs.
How many photographs does Chaz have?

Question 2: Use the grid method to find the following:

a) There are 35 rows of 24 chairs.
How many chairs altogether?

b) There are 25 minibuses and 12 children are on each for a school trip.
How many are there altogether?

c) A pizza costs £12. How much is 26 pizzas?

d) A coat costs £45. How much is 28 coats?

e) There are 12 cupcakes in a box.
Dara is organising a party and wants 200 cupcakes.
He buys 16 boxes.

Does Dara have enough cupcakes?

f) Find the product of 62 and 51

g) A cinema has 26 seats in each row.
There are 18 rows.During a showing of movie, there are 70 empty seats.

Work out how many people watch the movie.

h) Miss Jenkins owns an electronics shop. She orders 27 laptops at £413 each.
Miss Jenkins sells the 27 laptops for £600 each.

Work out the profit.

i) Work out the following multiplications

1 × 1
11 × 11
111 × 111
1111 × 1111

Predict the answer to 11111 × 11111
Predict the answer to 11111111 × 11111111
When will the pattern end?

Working

Question 3: [Kangaroo Grey 2014 Q6]

Which of the following calculations gives the largest result?

- 44 x 777
- 55 x 666
- 77 x 444
- 88 x 333
- 99 x 222

Working

Question4: Extra practice

a) 582×3

b) 727×8

c) 6×352

d) 9×645

e) 47×58

f) 74×87

g) 57×485

h) 95×724

i) 219×37

j) 264×336

k) 324×573

Lesson 8: Division with Whole numbers	**MNU 3-03a** **MNU 3-03b**
Benchmark: • To solve division problems with whole numbers	
Lesson: • https://app.mymaths.co.uk/1715-lesson/short-division • https://app.mymaths.co.uk/63-lesson/divide-decimals-by-whole-numbers	
Resource: • https://mathsbot.com/manipulatives/placeValueCounters • https://mathsbot.com/manipulatives/coins • https://corbettmaths.com/2013/12/28/division-video-98/ • https://corbettmaths.com/2012/08/21/dividing-decimals-by-whole-numbers/ • Questions courtesy of Mr Barton- Variation Theory, Teejay + UKMT	

Question 1: Complete the following:

a) A toy costs £6. Over a week, a shop makes £162 from selling the toy.
How many toys were sold?

£ ☐

b) A group of 3 friends take a journey in a taxi.
The total cost of the journey is £72.
The friends share the cost equally.
How much does each person pay?

£ ☐

c) A bookshelf in a classroom is 112cm long.
A teacher has 30 mathematics textbooks, each 4cm wide.
Can the teacher place all 30 textbooks on the shelf?
What is the maximum number of textbooks that will fit on the shelf?

☐

d) A group of 9 friends go on a coach tour.
The total cost for the tour is £648.
Work out the cost per person.

£ ☐

Question 2: Complete the following

a) At a fundraiser last year, 8 pupils raised £4968.
How much did they raise each?

£ ☐

b) What is $9044 \div 14$?

☐

c) What is £647 divided by 12?

£ ☐

Question 3 [JMC 2006 Q13]

At the end of a hard day at the mine, the seven dwarves share out all their gold nuggets, making sure that they each get the same number of nuggets. If there are any left over, they are given to Snow White. Which number of nuggets would leave Snow White with the most?

- 300
- 400
- 500
- 600
- 700

Working

Question 4 [JMC 2006 Q13]

What is the value of $\frac{12345}{1+2+3+4+5}$

Working

Question 5: Extra practice

a) 154 ÷ 8 ☐ b) 192 ÷ 12 ☐ c) 195 ÷ 13 ☐

d) 345 ÷ 15 ☐ e) 374 ÷ 22 ☐ f) 416 ÷ 16 ☐

g) 1150 ÷ 25 ☐ h) 805 ÷ 35 ☐ i) 630 ÷ 18 ☐

j) 5580 ÷ 90 ☐ k) 2520 ÷ 20 ☐ l) 175 ÷ 15 ☐

Lesson 9: Multiplication and dividing decimals by 10,100,1000	**MNU 2-03b**

Benchmark:

- **To be able to multiply and divide decimals up to two decimal places by 10,100 and 1000**

Lesson:

- https://app.mymaths.co.uk/60-lesson/multiply-decimals-by-10-and-100

Resource:

*Place value counters or money may be useful for this lesson

- https://mathsbot.com/manipulatives/coins
- https://mathsbot.com/manipulatives/placeValueCounters

Question 1

a) £47 is shared amongst 10 people. How much should every person get?

b) Jo is saving for a bike he wants to save £10.50 each week. How much will he have in 10 weeks?

c) S1 are trying to raise £660 for Malawi, if there are 100 pupils how much will each have to raise?

Question 2: Variation - Complete the following

$15 \times 10 =$ _____

$51 \times 10 =$ _____

$150 \times 10 =$ _____

$5100 \times 10 =$ _____

$0.051 \times 10 =$ _____

$0.51 \times 10 =$ _____

$5.1 \times 10 =$ _____

$51 \times 100 =$ _____

$15 \times 100 =$ _____

$501 \times 100 =$ _____

$5010 \times 100 =$ _____

$0.0501 \times 100 =$ _____

$0.501 \times 100 =$ _____

$5.01 \times 100 =$ _____

$56 \div 10 =$ _____

$65 \div 10 =$ _____

$5665 \div 10 =$ _____

$1111 \div 10 =$ _____

$6776 \div 10 =$ _____

$677.6 \div 10 =$ _____

$67.76 \div 10 =$ _____

$1265 \div 100 =$ _____

$5612 \div 100 =$ _____

$5126 \div 100 =$ _____

$5261 \div 100 =$ _____

$526.1 \div 100 =$ _____

$52.61 \div 100 =$ _____

$5.261 \div 100 =$ _____

Question 3:

Answer the questions below using your place value grid if you need to. Find the answer in the codebreaking table below and write the correct letter in the box to decipher an interesting fact about measures.

Be warned: there are some red herrings hidden here!

A = 448 ÷ 10 **B** = 0.000315 x 10 **C** = 23.52 ÷ 100 **E** = 3.38 ÷ 100 **G** = 44.8 ÷ 100

H = 315 x 100 **I** = 23.52 ÷ 10 **L** = 3.38 ÷ 10000 **M** = 4.48 x 1000 **N** = 0.315 x 1000

O = 23.52 x 10 **P** = 338 ÷ 100 **R** = 4.48 x 100 **S** = 0.315 x 10 **T** = 2.352 x 10

U= 0.338 ÷ 100 **W** = 0.00448 x 1000 **Y** = 0.0315 x 10

23.52	31500	0.0338		0.00315	2.352	0.448	0.448	0.0338	3.15	23.52

4480	0.0338	23.52	448	2.352	0.2352		0.00338	315	2.352	23.52

2.352	3.15		23.52	31500	0.0338		0.315	235.2	23.52	23.52	44.8

Answer:

_____

Lesson 10: Multiplication with decimal numbers	**MNU 3-03a** **MNU 3-03b**
Benchmark: • To solve multiplication problems using the grid method	
Lesson: • https://app.mymaths.co.uk/1719-lesson/short-and-long-multiplication • https://app.mymaths.co.uk/5782-lesson/mental-multiplication	
Resource: • https://corbettmaths.com/2015/12/10/times-tables/ • https://corbettmaths.com/2013/12/20/multiplication-grid-method-video-199/ • https://mathsbot.com/manipulatives/placeValueCounters • Questions courtesy of Mr Barton- Variation Theory + Corbettmaths	

Question 1: Using Mathsbot, answer the following questions

a) What is 8×0.9

b) What is 9×0.08

c) 6×0.7

d) 7×0.8

e) 8×0.04

f) 4×0.06

g) 3×0.03

Question 2: Using Mathsbot, answer the following questions

a) What is 8×5.9

b) What is 5×9.08

c) 6×4.7

d) 7×4.8

e) 4×6.24

Question 3:
Mrs Sneddon buys 7 calculators at £7.59 each. How much do they cost altogether?

Question 4:
Mr and Mrs Jones bring their 5 children to a museum.
Work out the total cost for the family.

Adults	£17.60 each
Children	£7.55 each

Question 5: [IMC 2002 Q2]
Which of the following has the greatest value?

- 0.3×7
- 0.5×5
- 0.2×11
- 0.09×30
- 0.026×100

Working:

Extra practice: Work out the answers to the following multiplications

a) 1.2 × 4 ☐ b) 3.2 × 3 ☐ c) 5.3 × 2 ☐ d) 7.3 × 3 ☐

e) 1.26 × 2 ☐ f) 2.63 × 3 ☐ g) 5.14 × 3 ☐ h) 6.28 × 4 ☐

i) 3.706 × 8 ☐ j) 4.953 × 7 ☐ k) 0.482 × 8 ☐ l) 0.085 × 7 ☐

Extension: Multiplying by decimals (Level 4)

Variation- Complete the questions below

$30 \times 40 =$ _____

$3 \times 40 =$ _____

$3 \times 400 =$ _____

$0.3 \times 400 =$ _____

$0.3 \times 40 =$ _____

$0.3 \times 4 =$ _____

$0.3 \times 0.4 =$ _____

$6 \times 5 =$ _____

$6 \times 0.5 =$ _____

$60 \times 0.5 =$ _____

$60 \times 0.05 =$ _____

$6 \times 0.05 =$ _____

$0.6 \times 0.05 =$ _____

$0.6 \times 0.5 =$ _____

[JMC 2007 Q1]

What is the value of $0.1 + 0.2 + 0.3 \times 0.4$?

Working

Extra practice

a) 3.1 x 0.5 b) 6.3 x 0.3 c) 5.4 x 0.7 d) 9.2 x 0.6

e) 4.8 x 0.9 f) 2.4 x 3.2 g) 9.1 x 1.3 h) 5.5 x 7.7

Lesson 11: Division with decimal numbers	**MNU 3-03a** **MNU 3-03b**
Benchmark: • To solve division problems with whole numbers	
Lesson: • https://app.mymaths.co.uk/1715-lesson/short-division • https://app.mymaths.co.uk/63-lesson/divide-decimals-by-whole-numbers	
Resource: • https://mathsbot.com/manipulatives/placeValueCounters • https://mathsbot.com/manipulatives/coins • https://corbettmaths.com/2013/12/28/division-video-98/ • https://corbettmaths.com/2012/08/21/dividing-decimals-by-whole-numbers/ • Questions courtesy of Mr Barton- Variation Theory, Teejay + UKMT	

Question 1: Complete the following:

a) Four friends share £6.52 equally.
How much do they each receive? £

b) James has 3.65m of rope into 5 pieces of equal length.
How long is equal piece of rope? £

c) Roger is organising a trip to a museum.
The total price of the tickets is £103.50
The total price for the coach is £64.80
If nine people are going on the trip, how much should they pay each?

d) A shop charges 12p to photocopy one page in full colour.
Sam has photocopied some pages in colour and the total cost is £16.08 £
How many pages did he photocopy?

e) 3 friends go out for pizza and the bill comes to £29.95. £
How much does each person pay?

f) 4 boys are playing football and accidently break a window. £
The repair comes to £57.40. What do they pay each?

Question 2: Complete the following:

a) $7.2 \div 3$ ☐ b) $6.8 \div 4$ ☐ c) $18.5 \div 5$ ☐ d) $9.6 \div 8$ ☐

e) $3.96 \div 3$ ☐ f) $0.75 \div 5$ ☐ g) $8.56 \div 4$ ☐ h) $0.528 \div 6$ ☐

i) $0.038 \div 5$ ☐ j) $1.4 \div 8$ ☐ k) $2.13 \div 6$ ☐ l) $0.284 \div 8$ ☐

Extension- Dividing by decimals (Level 4)

Problem – example pair

Worked Example	Your turn
$12 \div 0.3$	$12 \div 0.4$

Intelligent Practice

1. $50 \div 10 =$ _____
2. $50 \div 20 =$ _____
3. $50 \div 2 =$ _____
4. $50 \div 0.2 =$ _____
5. $5 \div 0.2 =$ _____
6. $0.5 \div 0.2 =$ _____
7. $0.5 \div 0.1 =$ _____
8. $5 \div 1 =$ _____
9. $5 \div 0.1 =$ _____

10. $0.1 \div 5 =$ _____
11. $0.1 \div 0.5 =$ _____
12. $1 \div 0.5 =$ _____
13. $0.1 \div 0.05 =$ _____
14. $0.2 \div 0.05 =$ _____
15. $0.2 \div 5 =$ _____
16. $5 \div 0.2 =$ _____
17. $0.5 \div 0.2 =$ _____
18. $0.05 \div 0.2 =$ _____

Question 3: [JMC 2019 Q2]

Which of these is equal to $(0.1 + 0.2 + 0.3 - 0.4) \div 0.5$?

- 0.01
- 0.02
- 0.04
- 0.1
- 0.4

Working

Lesson 12: Multiplying and Dividing Integers	MNU 3-04a

Benchmark:

- **To be able to solve multiplying and dividing problems working with integers**

Lesson:

- https://app.mymaths.co.uk/48-lesson/negative-numbers-2

Resource:

- **https://mathsbot.com/manipulatives/doubleSidedCounters**
- **https://corbettmaths.com/2012/08/20/multiplying-negative-numbers/**
- **https://corbettmaths.com/2012/08/20/dividing-involving-negatives/**
- Questions courtesy of Mr Barton- Variation Theory + Corbettmaths

Question 1: Pattern Spotting- Multiplying

1. $3 \times 5 =$
2. $3 \times 4 =$
3. $3 \times 3 =$
4. $3 \times 2 =$
5. $3 \times 1 =$
6. $3 \times 0 =$
7. $3 \times -1 =$
8. $3 \times -2 =$
9. $3 \times -3 =$
10. $3 \times -4 =$
11. $3 \times -5 =$

...

12. $3 \times -12 =$
13. $3 \times -59 =$

14. $-3 \times 5 =$
15. $-3 \times 4 =$
16. $-3 \times 3 =$
17. $-3 \times 2 =$
18. $-3 \times 1 =$
19. $-3 \times 0 =$
20. $-3 \times -1 =$
21. $-3 \times -2 =$
22. $-3 \times -3 =$
23. $-3 \times -4 =$
24. $-3 \times -5 =$

...

25. $-3 \times -12 =$
26. $-3 \times -59 =$

Question 2: Pattern Spotting- Dividing

1. $15 \div 3 =$
2. $12 \div 3 =$
3. $9 \div 3 =$
4. $6 \div 3 =$
5. $3 \div 3 =$
6. $0 \div 3 =$
7. $-3 \div 3 =$
8. $-6 \div 3 =$
9. $-9 \div 3 =$
10. $-12 \div 3 =$
11. $-15 \div 3 =$

...

12. $-36 \div 3 =$
13. $-81 \div 3 =$

1. $15 \div -3 =$
2. $12 \div -3 =$
3. $9 \div -3 =$
4. $6 \div -3 =$
5. $3 \div -3 =$
6. $0 \div -3 =$
7. $-3 \div -3 =$
8. $-6 \div -3 =$
9. $-9 \div -3 =$
10. $-12 \div -3 =$
11. $-15 \div -3 =$

...

12. $-36 \div -3 =$
13. $-81 \div -3 =$

Question 3:

In the magic squares below, the numbers in any column, row or diagonal multiply up to give the same answer.

Complete each magic square.

	36	
9	**6**	**4**
-12		

-5	**100**	
4		**25**
		-20

Question 4:

Work out the missing numbers

a) -6 x ___ = -30 b) -6 x ___ = 0 c) 32 ÷ ___ = -4 d) ___ x -6 = -54

e) -24÷ ___ = 6 f) ___÷-8 = -2 g) -6 x ___ = 18 h) ___ ÷ -3 = 4

Question 5: Extra practice

a) −9 × −5 ☐ b) −32 ÷ 8 ☐ c) 66 ÷ −6 ☐ d) 2 × −12 ☐

e) −24 ÷ −3 ☐ f) −12 × 7 ☐ g) −54 ÷ 6 ☐ h) −16 × −2 ☐

i) 8 × −6 ☐ j) −7 × −6 ☐ k) 40 ÷ −8 ☐ l) 56 ÷ −7 ☐

m) −81 ÷ −9 ☐ n) −14 × −5 ☐ o) 10 × −11 ☐ p) −65 ÷ 5 ☐

q) −90 × −3 ☐ r) −170 ÷ −10 ☐ s) 1 ÷ −1 ☐ t) −1.5 × −3 ☐

u) −17 ÷ 2 ☐ v) 2.2 × −10 ☐ w) −93 ÷ −10 ☐ x) −6.2 × −3 ☐

Lesson 13: A Consolidation of Working with Integers	MNU 3-04a

Benchmark:

- **To be able to solve multiplying and dividing problems working with integers**
- **To be able to solve addition and subtraction problems working with integers**

Lesson:

- https://app.mymaths.co.uk/48-lesson/negative-numbers-2

Resource:

- **https://mathsbot.com/manipulatives/doubleSidedCounters**
- **https://corbettmaths.com/2012/08/20/multiplying-negative-numbers/**
- **https://corbettmaths.com/2012/08/20/dividing-involving-negatives/**
- **https://corbettmaths.com/2013/06/08/negatives-addition-and-subtraction-2/**
- Questions courtesy of Mr Barton- Variation Theory

Question 1: Example- Problem pair

Worked Example	Your turn
$4 + (-1) =$	$5 + (-2) =$
$4 - (-1) =$	$5 - (-2) =$

Question 2: You try:

$5 + 3 =$

$3 + 5 =$

$(-3) + 5 =$

$5 + (-3) =$

$(-5) + (-3) =$

$(-5) + 3 =$

$(-5) - 3 =$

$(-3) - 5 =$

$3 - 5 =$

$3 - (-5) =$

$-3 - (-5) =$

$(-5) - (-3) =$

$(-5.2) - (-3) =$

$(-5.2) + (-3) =$

$(-1.2) + (-3) =$

$(-1.2) + 3 =$

$(-1.2) - (-3) =$

$(-1.2) - (-5) =$

$1.2 - 5 =$

$\frac{2}{3} - 5 =$

$(-\frac{2}{3}) - 5 =$

$(-\frac{2}{3}) + 5 =$

Question 3: Example- Problem pair

Worked Example	Your turn
$8 \times (-4) =$ $-8 \div (-4) =$	$-8 \times (-4) =$ $(-8) \div 4 =$

Question 4: You try:

$2 \times 10 =$

$10 \times 2 =$

$(-10) \times 2 =$

$10 \times (-2) =$

$(-10) \times (-2) =$

$(-10) \div (-2) =$

$10 \div (-2) =$

$(-10) \div 2 =$

$2 \div (-10) =$

$2 \div 10 =$

$10 \times 2 \times 2 =$

$10 \times 2 \times (-2) =$

$10 \times (-2) \times (-2) =$

$(-10) \times (-2) \times (-2) =$

$(-10) \div (-2) \times (-2) =$

$10 \div (-2) \times (-2) =$

Question 5: ***[JMO 2005 A3]***

Three different integers have a sum of 1 and a product of 36.

What are they?

Question 6:

The balance in Michelle's bank account was £1000.

- She withdrew £230 on Monday,
- She deposited £85 on Tuesday,
- She withdrew £899 on Wednesday,
- She deposited £30 on Thursday.

Explain why she was contacted by her unhappy bank manager on the Friday.

Lesson 14: Multiples and LCM	**MTH 3-05a**
Benchmark: • **To be able to identify common multiples, including lowest common multiple for whole numbers and can explain the method used**	
Lesson: • https://app.mymaths.co.uk/45-lesson/multiples • https://app.mymaths.co.uk/152-lesson/lowest-common-multiple	
Resource:https://corbettmaths.com/2012/08/11/lcm-and-common-multiples/ Questions courtesy of Mr Barton- Variation Theory, UKMT and Teejay	

Question 1: Example- Problem pair

Worked Example	Your turn
Find the LCM of 20 and 8	Find the LCM of 20 and 15

Question 2: Intelligent practice

25. 12 and 1 –> LCM =
26. 12 and 2 –> LCM =
27. 12 and 3 –> LCM =
28. 12 and 4 –> LCM =
29. 12 and 5 –> LCM =
30. 12 and 6 –> LCM =
31. 12 and 7 –> LCM =
32. 12 and 8 –> LCM =
33. 12 and 9 –> LCM =
34. 12 and 10 –> LCM =
35. 12 and 11–>LCM =
36. 12 and 12 –> LCM =

13. 12 and 13 –> LCM =
14. 12 and 14 –> LCM =
15. 12 and 15 –> LCM =
16. 12 and 16 –> LCM =
17. 12 and 17 –> LCM =
18. 12 and 18 –> LCM =
19. 12 and 19 –> LCM =
20. 12 and 20 –> LCM =
21. 12 and 30 –> LCM =
22. 12 and 40 –> LCM =
23. 12 and 50 –>LCM =
24. 12 and 60 –> LCM =

Question 3 [JMC 2009 Q18]

Six friends are having dinner together in their local restaurant. The first eats there every day, the second eats there every other day, the third eats there every third day, the fourth eats there every fourth day, the fifth every fifth day and the sixth eats there every sixth day. They agree to have a party the next time they all eat together there.

In how many days' time is the party?

Question 4:

- Driver lessons every 5 days.
- Putter lessons every 6 days.
- Sand Bunker lessons every 8 .

Howard's timetable for his golf lessons is:-

He had a lesson on all three on the same day.

How many days after that is he scheduled to have all three lessons on the same day again?

Question 5:

- the blue lights flash every 9 seconds.
- the green lights flash every 12 seconds.
- the red lights flash every 15 seconds.

A Christmas tree's lights are set so that:-

When they are switched on, they all flash together.

How long will it be until they flash together again?

Question 6: [JMC 2017 Q10]

Which of the following integers is not a multiple of 45?

- 765
- 675
- 585
- 495
- 305

Working:

Question 7: [JMC 2011 Q2]

How many of the integers 123, 234, 345, 456, 567 are multiples of 3?

Working:

Lesson 15: Factors and HCF	MTH 3-05a
Benchmark: • **To be able to identify common factors, including the highest common factor for whole numbers and can explain the method used**	
Lesson: • https://app.mymaths.co.uk/46-lesson/factors-and-primes • https://app.mymaths.co.uk/151-lesson/highest-common-factor	
Resource: https://corbettmaths.com/2012/08/24/common-factors-and-hcf/ Questions courtesy of Teejay + Mr Barton – Variation theory	

Question 1: Example- Problem pair

Worked Example	Your turn
Find the HCF of 20 and 8	Find the HCF of 20 and 15

Question 2: Intelligent practice

1. 12 and 1 –> HCF =
2. 12 and 2 –> HCF =
3. 12 and 3 –> HCF =
4. 12 and 4 –> HCF =
5. 12 and 5 –> HCF =
6. 12 and 6 –> HCF =
7. 12 and 7 –> HCF =
8. 12 and 8 –> HCF =
9. 12 and 9 –> HCF =
10. 12 and 10 –> HCF =
11. 12 and 11–> HCF=
12. 12 and 12 –>HCF =

13. 12 and 13 –> HCF =
14. 12 and 14 –> HCF =
15. 12 and 15 –> HCF =
16. 12 and 16 –> HCF =
17. 12 and 17 –> HCF =
18. 12 and 18 –> HCF =
19. 12 and 19 –> HCF =
20. 12 and 20 –> HCF =
21. 12 and 30 –> HCF =
22. 12 and 40 –> HCF =
23. 12 and 50 –>HCF =
24. 12 and 60 –> HCF =

Question 3:

Alannah has two lengths of ribbon.
One length of ribbon is 36cm long and the other length is 45cm long.
Alannah wants to cut lengths of ribbon into shorter lengths that are of equal length.Alannah does not want any ribbon left over.

What is the longest possible length for each of the shorter lengths of ribbon?

Question 4: Find the highest common factor (HCF) of each of these pairs of numbers.

a) 6 and 15 ☐ b) 10 and 17 ☐ c) 30 and 45 ☐ d) 40 and 60 ☐

e) 28 and 63 ☐ f) 24 and 36 ☐ g) 16 and 28 ☐ h) 18 and 45 ☐

i) 12, 6 and 15 ☐ j) 27, 33 and 12 ☐ k) 30, 15 and 25 ☐

Question 5: Mixture of both

Worked Example	Your turn
6 and 15 HCF = LCM =	6 and 20 HCF = LCM =

Question 6: Intelligent practice

5 and 10	HCF =	LCM =
10 and 5	HCF =	LCM =
20 and 5	HCF =	LCM =
20 and 10	HCF =	LCM =
20 and 30	HCF =	LCM =
4 and 30	HCF =	LCM =
5 and 30	HCF =	LCM =
7 and 30	HCF =	LCM =

Lesson 16: Basic Roots and Powers	MTH 3-06a

Benchmark:

- **To explore the notation and vocabulary associated with number powers and the advantages of writing numbers in this form.**
- **To be able to evaluate powers of whole numbers mentally or using technology**

Lesson:

- https://app.mymaths.co.uk/149-lesson/squares-and-triangles
- https://app.mymaths.co.uk/150-lesson/squares-and-cubes
- https://app.mymaths.co.uk/1729-lesson/higher-powers

Resource:

- **https://corbettmaths.com/2012/08/11/1336/**
- **https://corbettmaths.com/2013/03/31/triangular-numbers/**
- Courtesy of Mr Barton- Variation Theory + corbettmaths

Question 1: Example-Problem pair

Worked Example	Your turn
2^5	5^2

Question 2: Intelligent Practice

1. $8^2 =$
2. $2^6 =$
3. $4^3 =$
4. $3^4 =$
5. $2^4 =$
6. $1^4 =$
7. $0^4 =$
8. $0^{4123} =$
9. $1^{4123} =$
10. $4123^1 =$
11. $(-4123)^1 =$
12. $2^5 =$
13. $5^2 =$
14. $(-5)^2 =$
15. $(-5)^3 =$
16. $(-2)^3 =$
17. $(-2)^4 =$
18. $0.2^4 =$
19. $0.2^3 =$
20. $(\frac{1}{5})^3 =$
21. $(\frac{1}{4})^3 =$
22. $(\frac{3}{4})^3 =$
23. $(-\frac{3}{4})^3 =$
24. $(-\frac{3}{4})^2 =$
25. $(\frac{3}{4})^2 =$
26. $(\frac{a}{4})^2 =$
27. $(\frac{a}{4})^b =$

Question 3: Application

a) Circle the square numbers from the list below

91 101 10 2 4 81 200 16 90 121

b) 100 can be written as the sum of two different square numbers.
Which two square numbers?

c) 85 can be written as the sum of two square numbers in two different ways.
Show how this can be done.

Question 4:Example-Problem Pair

Worked Example	Your turn
$\sqrt{25} =$	$\sqrt{9} =$
$\sqrt[3]{125} =$	$\sqrt[3]{27} =$
$\sqrt[4]{625} =$	$\sqrt[4]{81} =$
$\sqrt{-25} =$	$\sqrt{-9} =$
$\sqrt[3]{-125} =$	$\sqrt[3]{-27} =$
$\sqrt{\frac{4}{25}} =$	$\sqrt{\frac{4}{9}} =$
$\sqrt{0.25} =$	$\sqrt{0.09} =$

Lesson 17: Converting between Fractions, Decimals and Percentages	MNU3-07a
Benchmark: • **To be able to convert fractions, decimal fractions or percentages into equivalent fractions, decimal fractions or percentages**	
Lesson: • https://app.mymaths.co.uk/141-lesson/frac-dec-perc-1	
• **https://corbettmaths.com/2013/02/15/fdp/** • **https://corbettmaths.com/2013/04/15/ordering-fractions-decimals-percentages/**	

Remember that a percent is really just a special way of expressing a fraction as a number out of 100. There are a few common ones to know about:

Quarters	$\frac{1}{4}$ can be written as 0.25 or 25% $\frac{3}{4}$ can be written as 0.75 or 75%
Fifths	$\frac{1}{5}$ can be written as 0.20 or 20% $\frac{4}{5}$ can be written as 0.8 or 80%
Tenths	$\frac{1}{10}$ can be written as 0.10 or 10% $\frac{7}{10}$ can be written as 0.7 or 70%
Hundredths	$\frac{1}{100}$ can be written as 0.01 or 1% $\frac{12}{100}$ can be written as 0.12 or 12%

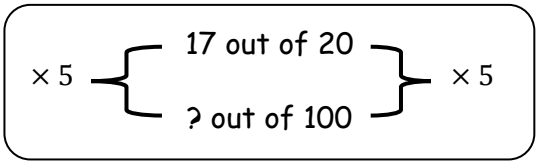
You can convert fractions to percentages without a calculator.

For this method we need to remember that percentage is "out of 100"

We will use a scaling method to work out our answer

Example 1:

$\frac{17}{20}$ of pupils in a class have brown hair. What percentage is this? What is this as a decimal?

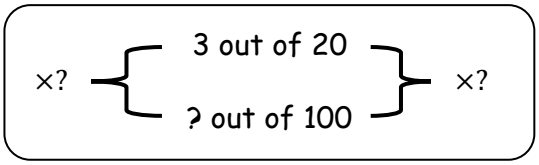


If we use our scaling method we can see that we can multiply by 5 to make our fraction out of 100, this then is easier to convert to a percentage and a decimal.

$17 \times 5 = 85$, therefore our answer is **85% or 0.85**

Example 2:

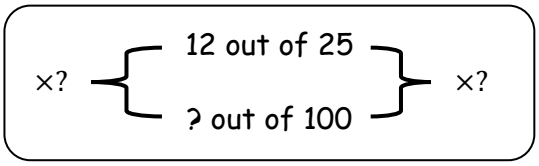
$\frac{3}{20}$ of pupils in a class have brown hair. What percentage is this?



Answer = _____

Example 3:

Write $\frac{12}{25}$ as a percentage and then a decimal



Answer = _____

You try:

Question 1: Fill out the following table

Fraction	Decimal	Percentage
$\frac{1}{5}$		%
—	0.1	%
—		75%
$\frac{23}{50}$		%
—	0.125	%
—		36%

Question 2:

A = 20% B = 0.17 C = 22% D = 0.177 E = $\frac{3}{20}$

Which number is the smallest A, B, C, D or E? ☐

Which number is the largest A, B, C, D or E? ☐

Question 3:

In a school, 34% of pupils come by bus. $\frac{7}{25}$ come by car and the rest walk.

What percentage of pupils come to school by walking?

Question 4: Intelligent Practice

1. Convert fraction to decimal

a) $\frac{1}{5}$ _____
b) $\frac{2}{5}$ _____
c) $\frac{3}{5}$ _____
d) $\frac{3}{50}$ _____
e) $\frac{30}{50}$ _____
f) $\frac{3}{500}$ _____
g) $\frac{5}{3}$ _____
h) $\frac{1}{6}$ _____
i) $\frac{2}{6}$ _____
j) $\frac{3}{20}$ _____
k) $\frac{6}{30}$ _____

2. Convert decimal to fraction

a) 0.48 _____
b) 0.49 _____
c) 0.50 _____
d) 0.5 _____
e) 0.05 _____
f) 0.005 _____
g) 0.085 _____
h) 0.85 _____
i) 1.85 _____
j) 1.085 _____
k) 2.085 _____
l) 2.058 _____
m) 2.58 _____

3. Convert fraction to percentages

a) $\frac{7}{10}$ _____
b) $\frac{7}{5}$ _____
c) $\frac{7}{50}$ _____
d) $\frac{700}{50}$ _____
e) $\frac{350}{50}$ _____
f) $\frac{35}{50}$ _____
g) $\frac{35}{500}$ _____
h) $\frac{350}{500}$ _____
i) $\frac{175}{500}$ _____
j) $\frac{30}{40}$ _____
k) $\frac{30}{80}$ _____

Lesson 18: Fractions of a quantity	MNU 3-07a
Benchmark: • **Uses knowledge of fractions, decimal fractions and percentages to carry out calculations with and without a calculator.**	
Lesson: • https://app.mymaths.co.uk/87-lesson/fractions-of-amounts	
• **https://www.mathsbox.org.uk/topic/t/topichome.php**	

Question 1: [JMC 2002 Q3]

Which of the following has the biggest value?

- $\frac{1}{2}$ of 24
- $\frac{1}{3}$ of 36
- $\frac{1}{4}$ of 60
- $\frac{1}{5}$ of 50
- $\frac{1}{6}$ of 84

Question 2: [JMC 2012 Q8]

Tommy Thomas's tankard holds 480ml when it is one quarter empty. How much does it hold when it is one quarter full?

Question 3: [Kangaroo Grey 2019 Q14]

Michael keeps dogs, cows, cats and kangaroos as pets. He has 24 pets in total and $\frac{1}{8}$ of them are dogs, $\frac{3}{4}$ are not cows and $\frac{2}{3}$ are not cats.

How many kangaroos does Michael keep?

Question 4: [IMC 2011 Q13]

The three blind mice stole a piece of cheese. In the night, the first mouse ate $\frac{1}{3}$ of the cheese. Later, the second mouse ate $\frac{1}{3}$ of the remaining cheese. Finally, a third mouse ate $\frac{1}{3}$ of what was then left of the cheese.

Between them, what fraction of the cheese did they eat?

Question 5: [IMC 1998 Q1]

One quarter of a number is 24. What is one third of the original number?

Question 6: Complete the following

1. *Find* $\frac{1}{3}$ of £12
2. *Find* $\frac{2}{3}$ of £12
3. *Find* $\frac{2}{3}$ of £24
4. *Find* $\frac{4}{3}$ of £24
5. *Find* $\frac{3}{4}$ of £24
6. *Find* $\frac{6}{8}$ of £24
7. *Find* $\frac{5}{8}$ of £24
8. *Find* $\frac{5}{8}$ of £12
9. *Find* $\frac{8}{5}$ of £12
10. *Find* $1\frac{3}{5}$ of £12

Extension: Reverse fractions of an amount. Find the value of x in each question

1. $\frac{1}{2}$ of x is 6.	8. $\frac{5}{4}$ of x is 200.
2. $\frac{1}{3}$ of x is 6.	9. $\frac{5}{4}$ of x is 2.
3. $\frac{1}{4}$ of x is 6.	10. $\frac{5}{4}$ of x is 5.
4. $\frac{1}{4}$ of x is 3.	11. $\frac{x}{4}$ of 4 is 5.
5. $\frac{3}{4}$ of x is 3.	12. $\frac{x}{4}$ of 4 is 20.
6. $\frac{3}{4}$ of x is 30.	13. $\frac{x}{4}$ of 8 is 20.
7. $\frac{5}{4}$ of x is 30.	

Lesson 19: Mixed Numbers and Improper Fractions	MTH 3-07c

Benchmark:

- **To be able to convert between whole or mixed numbers, improper fractions and decimal fractions**

Lesson:

- https://app.mymaths.co.uk/6032-lesson/new-comparing-mixed-and-improper-fractions-bar-model
- https://app.mymaths.co.uk/88-lesson/improper-and-mixed-fractions

Resource& video:

- https://corbettmaths.com/2013/02/15/mixed-numbers-to-improper-fractions/
- https://corbettmaths.com/2013/02/15/improper-fractions-to-mixed-numbers/
- https://mathsbot.com/manipulatives/blocks

Question 1: Problem Pair

Worked Example	Your turn
1. Convert $1\frac{1}{5}$ to an improper fraction	1. Convert $2\frac{1}{8}$ to an improper fraction
2. Convert $\frac{11}{5}$ to a mixed number	2. Convert $\frac{17}{5}$ to a mixed number

Question 2: Intelligent Practice

Convert the following to improper fractions

$1\frac{1}{5}$

$2\frac{1}{5}$

$3\frac{1}{5}$

$3\frac{2}{5}$

$3\frac{3}{5}$

$3\frac{3}{10}$

$3\frac{3}{9}$

$4\frac{3}{9}$

$4\frac{x}{9}$

$4\frac{9}{x}$

Convert the following to mixed numbers

$\frac{7}{4}$

$\frac{9}{4}$

$\frac{9}{8}$

$\frac{18}{8}$

$\frac{36}{8}$

$\frac{36}{4}$

$\frac{36}{2}$

$\frac{37}{2}$

$\frac{37}{3}$

$\frac{37x}{3}$

$\frac{74x}{3}$

$\frac{74x}{3x}$

Lesson 20: Adding and Subtracting Fractions	**MTH 3-07b**
Benchmark: • **To be able to add and subtract whole numbers and fractions, including when changing a denominator.**	
Lesson: • https://app.mymaths.co.uk/91-lesson/adding-subtracting-fractions	
Resource & video: • https://corbettmaths.com/2013/02/15/adding-fractions-same-denominator/ • https://corbettmaths.com/2012/08/21/fractions-addition-and-subtraction/ • https://mathsbot.com/manipulatives/bar	

Question 1:

a) On Monday, Colin ate $\frac{1}{5}$ of a cake.
On Tuesday, he ate $\frac{3}{5}$ of the same cake.
In total, how much of the cake has Colin eaten? How much was left?

Question 2:

a) In a car park, $\frac{1}{3}$ of the cars are black.
$\frac{2}{5}$ of the cars are silver.
What fraction of the cars are black or silver?

b) Andy has a bag of sugar that contains $\frac{5}{8}$ kg
He uses $\frac{2}{5}$ kg of sugar to make a cake.
How much sugar does Andy have left?

Question 3:[JMC 2008 Q9]

Which of the following has the smallest value?

- $\frac{1}{2} - \frac{1}{3}$
- $\frac{1}{3} - \frac{1}{4}$
- $\frac{1}{4} - \frac{1}{5}$
- $\frac{1}{5} - \frac{1}{6}$
- $\frac{1}{6} - \frac{1}{7}$

Working

Question 4- Problem Pair

Worked Example	Your turn
$\frac{1}{3} + \frac{2}{5}$	$\frac{2}{3} + \frac{1}{5}$
$\frac{4}{5} - \frac{1}{3}$	$\frac{1}{5} - \frac{4}{3}$

Question 5: Intelligent practice

$\frac{1}{7} + \frac{2}{5}$	$\frac{3}{4} + \frac{2}{3}$	$\frac{2}{3} - \frac{3}{4}$	$\frac{2}{5} - \frac{1}{7}$
$\frac{2}{5} + \frac{1}{7}$	$\frac{3}{4} + \frac{2}{5}$	$\frac{3}{4} - \frac{2}{3}$	$\frac{1}{7} - \frac{2}{5}$
$\frac{2}{5} + \frac{2}{7}$	$\frac{3}{40} + \frac{2}{5}$	$\frac{3}{4} - \frac{2}{30}$	$\frac{2}{5} - \frac{2}{7}$
$\frac{2}{5} + \frac{2}{3}$	$\frac{3}{4} + \frac{3}{5}$	$\frac{3}{4} - \frac{3}{5}$	$\frac{2}{3} - \frac{2}{5}$
$\frac{1}{4} + \frac{2}{3}$	$\frac{3}{4} + \frac{6}{10}$	$\frac{3}{4} - \frac{9}{15}$	$\frac{2}{3} - \frac{1}{4}$

Lesson 21: Adding and Subtracting Mixed Fractions	MTH 3-07b
Benchmark: • **To be able to add and subtract whole numbers and fractions, including when changing a denominator.**	
Lesson: • https://app.mymaths.co.uk/91-lesson/adding-subtracting-fractions	
Resource & video: • https://corbettmaths.com/2013/02/15/adding-fractions-same-denominator/ • https://corbettmaths.com/2012/08/21/fractions-addition-and-subtraction/ • https://mathsbot.com/manipulatives/bar	

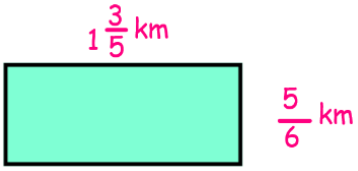
Question 1: Complete the following

a) Cameron mixes $11\frac{3}{5}$ kg sand with $18\frac{4}{5}$ kg of cement.
What is the total weight of the mixture?

b) A piece of rope was $4\frac{3}{5}$ metres long.
A piece measuring $1\frac{2}{5}$ was cut off. What length of rope remained?

c) Of the $6\frac{1}{2}$ hours my flight takes to New York I had flown $4\frac{1}{4}$ hours of it.
How much longer did my journey take?

d) Work out the perimeter of this rectangle.



Question2: Problem Pair

Worked Example	Your turn
$2\frac{1}{3} + 1\frac{2}{5}$	$1\frac{2}{3} + 2\frac{1}{5}$
$2\frac{4}{5} - 1\frac{1}{3}$	$1\frac{1}{5} - 2\frac{4}{3}$

Question 3: Intelligent practice

Courtesy of Mr Barton- Variation Theory

1. $1\frac{1}{2} + 1\frac{1}{3}$
2. $1\frac{1}{2} + 1\frac{1}{4}$
3. $1\frac{1}{2} + 1\frac{1}{5}$
4. $2\frac{1}{2} + 2\frac{1}{5}$
5. $2\frac{1}{7} + 1\frac{1}{3}$
6. $1\frac{x}{2} + 1\frac{2x}{2}$

7. $2\frac{1}{2} - 1\frac{1}{3}$
8. $2\frac{1}{2} - 1\frac{1}{4}$
9. $2\frac{1}{2} - 2\frac{1}{4}$
10. $2\frac{1}{4} - 2\frac{1}{2}$
11. $3\frac{1}{5} - 2\frac{1}{2}$
12. $2\frac{2x}{2} - 1\frac{x}{2}$

Lesson 22: Finding a percentage of a quantity	MNU 3-07a
Benchmark: • **Uses knowledge of fractions, decimal fractions and percentages to carry out calculations with and without a calculator.**	
Lesson: • https://app.mymaths.co.uk/140-lesson/percentages-of-amounts-2	
Resource & video: • https://corbettmaths.com/wp-content/uploads/2013/02/percentage-of-an-amount-non-calculator-pdf1.pdf • https://corbettmaths.com/2012/08/20/percentages-of-amounts-non-calculator/	

Question 1:

Which of the following has the biggest value?

- 50% of £24
- 30% of £36
- 25% of £60
- 20% of £50
- 12.5% of 84

Question 2:

a) Sarah has made £220 wages working in a call centre this week. She spends 25% of this amount on a food shop. How much is this?

b) Each week during the month Sarah works different hours and spends different amounts on her food shop. How much does she spend **altogether** over the following 4 weeks.

1. 40% of £220
2. 20% of £110
3. 30% of £440
4. 90% of £460

Question 3: [JMO 2004 A3]

On Monday the Pied Piper caught 1000 rats in a city. On Tuesday he caught 10% fewer than on Monday. On Wednesday he caught 20% more than on Tuesday. On Thursday he caught 30% fewer than on Wednesday. On Friday he rested.

How many rats did he catch in total that week?

Question 4: Extra practice

1. Hannah is paid £280. She spends 45% on her rent, 22% on food and bills and saves the rest.
   (a) How much does Hannah spend on rent?
   (b) How much does Hannah spend on food and bills?
   (c) How much does Hannah save?

2. There are 220 students in Year 7. 15% cycle to school. 65% are driven to school. The rest walk to school.
   (a) How many students cycle to school?
   (b) How many students are driven to school?
   (c) How many students walk to school?

3. Fredrick is an estate agent in New York and earns 5% commission on every property sold. How much will he receive is he sells a flat for £830,000?

4. A cake weighs 750g. 40% of the cake is sugar.
   Work out how many grams of sugar are in the cake.

5. There are 600 members of a running club. 45% of these members are male.
   Work out How many people are female.

6. Martin gives 35% of £75 to his sister. How much money does Martin keep?

Lesson 23: Ratio	MNU 3-08a
Benchmark: • **To be able to express quantities as a ratio and where appropriate simplify**	
Lesson: • https://app.mymaths.co.uk/5857-lesson/modelling-ratio • https://app.mymaths.co.uk/5791-lesson/scaling-and-rate-problems	
Resource& video: • https://corbettmaths.com/2013/03/03/ratio-sharing-the-total/ • https://corbettmaths.com/2013/05/16/ratio-given-one-quantity/	

Question 1:

Dennis mixes 60ml of diluting juice with 400ml of water.

Draw a diagram to show this and write the ratio of diluting juice to water in its simplest form.

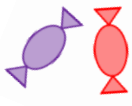
Question 2:

Here are the ingredients needed to make a smoothie.

Write down the following ratios in its simplest form:

a) Bananas to strawberries
b) Strawberries to bananas
c) Bananas to total number of fruits
d) Strawberries to total number of fruits

Question 3:



Emma has a packet of sweets.

For every 3 red sweets there are 8 purple ones.

If there are 44 sweets in the packet in total how many of each colour are there?

Question 4:

A farmer plants some crops in a field.

For every 14 carrots he plants 6 potatoes.

He plants 84potatoes in total.

a) How many carrots did he plant?
b) How many vegetables did he plant in total?

Question 5:

Alice mixes 4 parts of red paint with 3 parts blue paint to make purple paint.

If she uses 12 parts blue paint, how much red paint did she use?

Question 6: Differentiated questions

a) Anna and Billy share £108 in the ratio 5:4. Find how much Anna gets.

b) Alex, Barry and Connor split £60 in the ratio 11:10:9.
Find how much Barry gets.

c) Alfie and Billy split some money in the ratio 12:11.
If Billy got £22, find how much Alfie got.

d) Anna, Bradley and Connor split some money in the ratio 1:8:6.
If Bradley got £40, find how much Anna got.

e) Alisha and Bella split some money in the ratio 12:10.
If Bella gets £18 less than Alisha, find how much money was shared.

f) A piece of wood is split into 3 pieces in the ratio of 3:2:1. If the smallest piece is 22m, find the total length of the wood.

Lesson 24: Unitary & Direct Proportion	MNU 3-08a
Benchmark: • **Solves problems in which related quantities are increased or decreased proportionally**	
Lesson: • https://app.mymaths.co.uk/162-lesson/unitary-method • https://app.mymaths.co.uk/1789-lesson/direct-proportion	
Resource& video: • https://corbettmaths.com/2018/12/31/unitary-method/ • https://corbettmaths.com/2013/04/04/direct-proportion/	

Question 1: Mental agility

Find the cost per item :

a) 8 sweets costing 48p ☐

b) 4 Tshirts costing £116 ☐

c) 9 DVD's costing £63 ☐

d) 11 ice-creams costing £2·20 ☐

e) 12 pencils costing £2·40 ☐

f) 7cars weighing 2100kg ☐

Question 2:

Melissa and Joey are waiters in a restaurant.

They are both paid the same amount of money for each hour that they work.

Melissa worked 6 hours and is paid £48.

Joey worked 8 hours.

How much is Joey paid?

Question 3:

Rosie is making Chili for dinner.

The recipe will make enough Chilli for 6 people

Rosie wants to make enough for 4 people.

How much of each ingredient will she need?

Chilli Recipe

1.8kg mince

300g kidney beans

4 small chillis

480g tomatoes

Question 4: Problem pair

Worked Example	Your turn
4 rulers cost £36 How much does 1 ruler cost? How much does 5 rulers cost?	9 Rulers cost £36 How much does 1 ruler cost? How much does 5 rulers cost?

Question 5: Intelligent practice

6 rulers cost £30. How much does 1 ruler cost?	6 rulers cost £3. How much does 1 ruler cost?	6 rulers cost £24. How much do 4 rulers cost?
3 rulers cost £30. How much does 1 ruler cost?	12 rulers cost £3. How much does 1 ruler cost?	6 rulers cost £24. How much do 20 rulers cost?
15 rulers cost £30. How much does 1 ruler cost?	3 rulers cost £12. How much does 1 ruler cost?	60 rulers cost £24. How much do 20 rulers cost?
15 rulers cost £60. How much does 1 ruler cost?	3 rulers cost £12. How much do 2 rulers cost?	60 rulers cost £24. How much do 5 rulers cost?
30 rulers cost £60. How much does 1 ruler cost?	3 rulers cost £12. How much do 4 rulers cost?	60 rulers cost £4.80. How much do 5 rulers cost?
60 rulers cost £30. How much does 1 ruler cost?	6 rulers cost £12. How much do 4 rulers cost?	15 rulers cost £4.80. How much do 5 rulers cost?

Lesson 25: Best Value	MNU 3-09a

Benchmark:

- **To demonstrates an understanding of best value in relation to contracts and services when comparing products.**
- **To be able to chooses the best value for their personal situation and justify your choice**

Lesson:

- https://app.mymaths.co.uk/110-lesson/best-buys-and-value-for-money

Resource& video:

- https://corbettmaths.com/2013/03/26/best-buys/
- Questions courtesy of Teejay and Corbettmaths

Question 1

Mr Cooke wants to hire a taxi.

He calls three different taxi companies and asks them for their prices.

- **Central taxis: A 5 mile journey costs £20**
- **North cabs: A 4 mile journey costs £13**
- **South cars: A 10 mile journey costs £28**

Which taxi company is the best value for money and why?

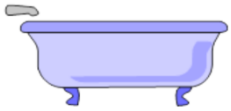
Question 2:

Soap powder comes in two sizes

- **The 600g box costs £14.40**
- **The 800g box costs £17.60**

Which is the better deal?

Question 3:



Michael needed a plumber to install a new bath and shower

- **Martin the plumber charges £75 for the first hour and £35 per hour thereafter.**
- **Paul the plumber has a call-out charge of £50 and charges £30 per hour**

Which plumber is cheaper for a 3 hour job?

Question 4:

Bleach comes in two sizes:

- **The small bottle costs £2.95 for 500ml**
- **The big bottle costs £11.20 for 2 litres**

Which is the better value and by how much?

Question 5: For each pair of choices, tick the one which is the best value.

400g for £2.00 ☐	700g for £3.60 ☐
2kg for £9.00 ☐	3.4kg for £6.00 ☐
600g for £5.00 ☐	900g for £3.60 ☐
2.8kg for £10.00 ☐	1.4kg for £7.50 ☐

Lesson 26: Budgeting	MNU 3-09a

Benchmark:

- **To be able to budget effectively, using digital technology where appropriate, showing development of financial capability**

Lesson:

- https://app.mymaths.co.uk/112-lesson/budgeting

Eve is a single mother of two young boys Alfie & Finn, and she is concerned about managing her finances properly.

She works part time in an office and receives benefits from the government to help her look after her children, but she has a lot of expenses each month.

She decides to set up a monthly budget so that she knows how much money she is spending.

Eve has listed her income and expenditures but some of these are weekly and others are monthly

Council Tax - £55 per month	**Gas - £80 per month**
Wages - £600 per month	**Food - £80 per week**
Electricity - £45 per month	**Rent £350 per month**
Child benefit - £33.70 per week	**Fuel - £70 per month**
Child Tax Credit - £113.50 per week	**Working tax credit - £68 per week**
Car loan - £100 per month	**Car insurance - £51 per month**
Credit Card - £100 per month	**TV licence - £15 per month**
Clothing and shoes - £80 per month	**Mobile Phone top-up - £60 per month**

1. **Transfer the items on Eve's list to the income or expenditure sides of the budget planner**

Eve's Monthly budget planner	
Income	**Expenditure**

2. Calculate the monthly amounts of the following to assist Eve?

a) Food per month

b) Child Benefit per month

c) Child Tax Credit per month

d) Working Tax Credit per month

3. By subtracting her expenditure from her income, Eve calculates how much money she has left each month.
How much does she have?

4. Eve takes her car to the garage for a MOT and she gets a bill for £220 for repairs needed to be carried out.
How much money will Eve have left this month once the bill is paid?

5. Eve currently works 21 hrs a week at her job, but her manager asks if she could increase her hours to 28 hrs per week. This would mean her pay would go up to £820 per month but her working tax credit would decrease to £150 per month.
What affect would this have on her budget?
Should she increase her hours ?

6. Look at Eve's income and expenditure, what other changes could have an effect on her budget?

The exercise you have just completed shows how we use a budget to calculate how much money we have to spend either weekly or monthly and where it goes.

Good money management is a very important life skill and something that you will need to learn to do, so that you don't get into financial difficulties.

A budget helps us manage our money efficiently.

Reflective questions

1. What do you think is the basic rule of a budget?

2. What do you think the most difficult part of managing a budget would be?

3. What are the benefits of setting a budget ?

Extension

You have been given a budget of £250 to design and furnish your bedroom with furniture from IKEA.

Think of furniture you need and furniture you want. Research how much each item is and if you can afford everything on your list.

Remember to make the most of budget saving product promotions e.g. buy one get one free!

Enjoy!!

Lesson 27: Foreign Exchange	**MNU 3-09b**
Benchmark: • **To be able to convert between different currencies.** • **To be able to find the best exchange rate for buying goods**	
Lesson: • https://app.mymaths.co.uk/1738-lesson/currency-exchange	
Resource& video: • https://corbettmaths.com/2016/01/03/exchange-rates/	

The table shows how much £1 is worth in other countries. For example £1 = $1.68 (American).

Use the information in the table to answer the following questions

British Pound	**1.00 GBP**
Euro	1.24
US Dollar	1.68
Indian Rupee	99.45
Australian Dollar	1.79
Canadian Dollar	1.83
Emirati Dirham	6.16
Swiss Franc	1.51
Chinese Yuan	10.44
Malaysian Ringgit	5.38
New Zealand Dollar	1.97

Question 1:

I have £150. How much will I have if I go to:

a) Europe
b) America
c) Australia

Question 2:

How much money do I have in pounds if I have:

a) 340 US dollars
b) 400 Canadian dollars
c) 2000 Indian Rupee

Question 3:

I have taken my family to Paris to climb the Eiffel Tower. I convert £200 to Euros.

a) Calculate how many Euros £200 pounds is?

b) I spend 163 Euros will visiting Paris. When returning to England I exchange my Euros to Pounds. Calculate how many pounds I have?

Question 4: What is the best deal?

322 Euros

$370

Exchange Rate: £1=	
Euro	1.24
American Dollar	1.55
Yen	9.83
Rupee	85.56
Rand	13.03

Question 5:

I am going on a trip to America and I need to convert my money to dollars, how many dollars will I have if I start with:

a) 600 Swiss Francs
b) 800 New Zealand dollars
c) 900 Emirati Dirham

Question 6:

Ellen bought her laptop in Hamburg, Germany for €542.

Kara bought the same laptop in San Francisco, America for $642.

Louise had paid £442 in Edinburgh for the identical laptop.

Who got the best deal?

Question 7: Extension questions

a) Kevin took £960 on holiday to Italy. He spent 90% of his money.
How many Euros did he have left?

b) Sara also went on holiday to Italy.She returned home with £200 whichwas 25% of her original spending money.
How many Euros did she spend on holiday?

c) Mr Forbes was given a £850 expenses account. He changed this into Euros and spent €700 in Italy. He then went to India and spent 1670 Rupees, and onto America where he spent $450.
Did Mr Forbes overspend on his expense account?
Explain your reasoning

Lesson 28: Time Intervals	MNU 3-10a
Benchmark: • **To be able to calculate time durations across hours and days.**	
Lesson: • https://app.mymaths.co.uk/290-lesson/time-calculations	
Resource& video: • https://corbettmaths.com/2013/10/24/calculations-involving-time/	

Question 1:

A late-night film started at 2150 and lasted for 2 hours 15 minutes. When did it finish?

Use the counting on method to help you

Question 2:

Celtic are set to play Hearts at the weekend. If the game starts at 14:00 and the match lasts 90 minutes plus a break at half time for 25 minutes, what time will the full match be over at?

Question 3: [JMC 2019 Q1]

How many minutes is it from 23:33 today to 01:18 tomorrow?

Question 5: [JMC 2015 Q2]

It has just turned 22:22. How many minutes are there until midnight?

Question 6: [JMC 2017 Q2]

Nadiya is baking a cake. The recipe says that her cake should be baked in the oven for 2 hour and 32 minutes. She puts the cake in the oven at 11:40 am. At what time should she take the cake out of the oven?

Question 7:[JMC 2007 Q2]

My train was scheduled to leave at 17:40 and to arrive at 18:20. However, it started five minutes late and the journey then took 42 minutes. At what time did I arrive?

- 18: 21
- 18: 23
- 18: 25
- 18: 27
- 18: 29

Working

Question 8: [IMC 2006 Q8]

Sydney flew to Melbourne, Australia. The flying time to Melbourne, which is 11 hours ahead of Britain, was 21 hours. Sydney's flight left London at 11.30am on Tuesday.

What time was it in Melbourne when Sydney's flight arrived?

Lesson 29: DST Calculations	MNU 3-10a
Benchmark: • **To apply knowledge of the relationship between speed, distance and time to find each of the three variables in real life contexts**	
Lesson: • https://app.mymaths.co.uk/296-lesson/speed	
Resource& video: • https://corbettmaths.com/2016/01/01/speed-distance-time/	

Question 1: Convert the times from hours/minutes into hours, without a calculator.

a) 15 minutes	b) 30 minutes	c) 45 minutes
d) 20 minutes	e) 40 minutes	f) 2hr 30 minutes
g) 1 hr 15 minutes	h) 3hr 45 minutes	i) 2hr 40 minutes
j) 5hr 30 minutes	k) 7 hr 20 minutes	l) 4hr 15 minutes

Question 2: Convert the times from hours/minutes into hours, without a calculator.

a) 18 minutes	b) 54 minutes	c) 1 hr 3 minutes
d) 1hr 36 minutes	e) 2 hrs 48 minutes	f) 2hr 33 minutes
g) 8 hr 51 minutes	h) 3hr 21 minutes	i) 27 minutes

Question 3: Convert the times below from hours into hours/minutes

a) 0.75 hours	b) 1.25 hours	c) 5.5 hours
d) 1.333... hours	e) 2.666... hours	f) 10.75 hours
g) 3.25 hours	h) 0.5 hours	i) 23.3333... hours

Question 4: A jet fighter is travelling at a speed of 680 mph. How far will the fighter travel in 45 minutes?

Question 5:

A plane left Glasgow at 7.45 pm and flew 1230miles to Lyon in France, arriving at 10.15 pm.

a) How long did the journey take?
b) What was the plane's average speed?

Question 6:

An aeroplane flies a distance of 2310 miles at an average speed of 420mph.

Calculate how long in hours and minutes, the journey will take.

Question 7:

A train is travelling a distance of 390 km. The journey takes 3h 45m. Calculate the average speed of the train.

Question 8: Extra practice

Use the correct formula to answer these questions:-

a) Walking at 3 mph for 1 ½ hours. Find the distance travelled.

b) Cycling for 25 miles at 18 mph. Find the time taken.

c) Going 280 miles in 2 hours 30 minutes. Find the average speed.

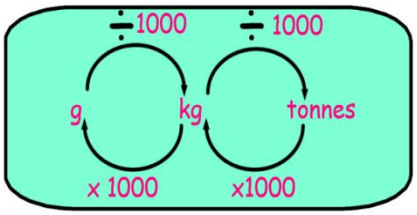
d) Sailing at 16 km/hr for 3 hours 15 minutes. Find the length of the journey.

e) Flying at 280 km/hr over 1400 km. Find the time taken.

f) Travelling 430 km in 7 hours 15 minutes. Find the average speed.

Lesson 30: Unit Conversions up to 3dp	MNU 3-11a
Benchmark: • **Converts between standard units to three decimal places and applies this when solving calculations of length, capacity, volume and area.**	
Lesson: • https://app.mymaths.co.uk/280-lesson/converting-measures	
Resource& video: • https://corbettmaths.com/2014/01/16/metric-units-for-capacity/ • https://corbettmaths.com/2014/01/16/metric-units-for-length/ • https://corbettmaths.com/2014/01/16/metric-units-for-mass/	

Question 1: Fill in the blanks where appropriate



a) There are _____ grams in one kilogram.

b) There are _____ kilograms in one tonne.

c) Use these facts to complete the tables and diagram

g	kg
4830	66.5
75	

kg	tonnes
118550	17.2
430	

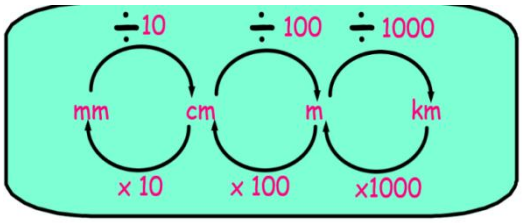
Question 2:

Convert the following lengths:

a) 85kg to g
b) 290g to kg
c) 560g to kg

d) 304kg to g
e) 450g to kg
f) 128g to kg

Question 3: Fill in the blanks where appropriate



a) There are _____ mm in one centimetre.

b) There are _____ cm in one metre.

c) There are _____ m in one kilometre

d) Use these facts to complete the tables and diagram

mm	cm	m	km
400			
	450		
		80	
			14.3

Question 4:

Convert the following lengths:

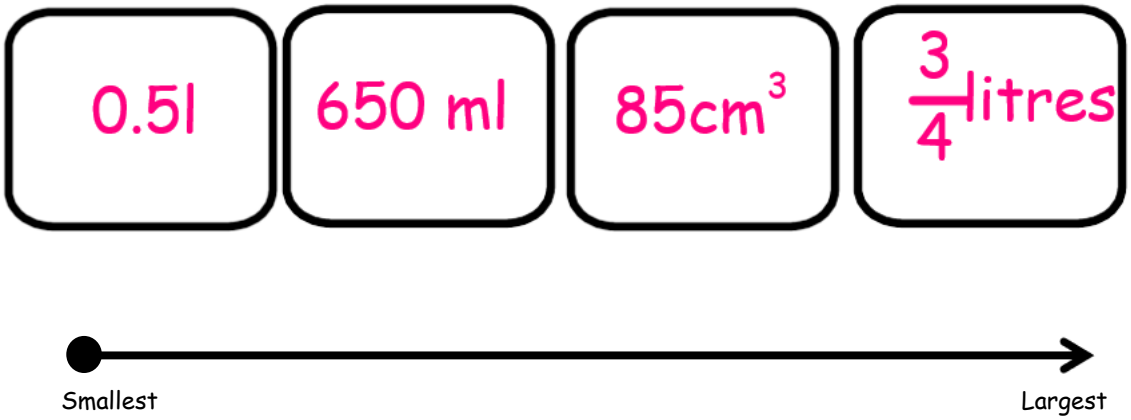
d) 65cm to mm
e) 33cm to m
f) 3.4m to cm
g) 67m to mm
h) 2350m to km
i) 17 km to m

g) 5cm to mm
h) 451cm to m
i) 0.5m to cm
j) 0.7m to mm
k) 24m to km
l)0.07km to m

Question 5: Fill in the blanks where appropriate

a) There are _____ ml in one litre.

b) Place these capacities in order from smallest to largest



Question 6:

Convert the following:

a) 0.2L to ml
b) 45 cm^3 to L
c) 62 L to ml
d) 330 ml to cm^3

Question 7: Fill in the blanks where appropriate

a) There are _____seconds in one minute.

b) There are _____ minutes in one hour.

c) There are _____ hours in one day.

d) Complete the table below

sec	min	hour
400		
	450	
		1.5
8000		
	6	
		24